

Surgery despite multiple non-interventional images of a porcelain aorta

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DESCRIPTION

An 80-year-old woman with coronary artery disease, mitral regurgitation and persistent atrial fibrillation with intermittent rapid ventricular rate was accepted for Coronary Artery Bypass Grafting (CABG) with epicardial lead insertion, at a joint CTS-cardiology meeting.

A porcelain aorta was found following the midline sternotomy incision and the patient was deemed unsuitable for surgery. Retrospective review of her imaging showed a heavily calcified aorta on electro-physiology fluoroscopy ([figure 1](#)) and other radiographic studies ([figure 2](#)), potentially precluding a surgical option.

Preoperative identification of a porcelain aorta is critical. Extensive circumferential aortic calcification has important clinical implications for cardiac surgery.¹ Severe aortic atherosclerosis usually suggests systemic atherosclerosis, increasing the risk of perioperative complications including stroke.² A porcelain aorta is technically problematic for aortic clamping, aortotomy and central coronary bypass anastomosis.³ Overall, a porcelain aorta is associated with increased morbidity and mortality.³

Diagnosis of a porcelain aorta is often incidental, or as part of dedicated screening, in the evaluation of an embolic event or in procedural planning.⁴ Clinicians must be attentive to recognising this condition, which may be identified on chest X-ray, fluoroscopy, angiographic and echocardiographic imaging. Further assessment can then be performed

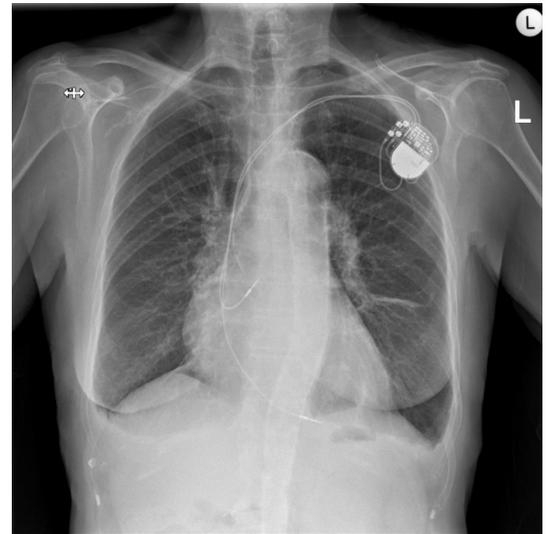


Figure 2 Chest X-ray prior to admission to the operating theatre shows a porcelain aorta.

using non-contrast CT, to assess burden of calcification⁵ as well as electron-beam CT and multislice (spiral) CT for cardiac, coronary and aortic calcification.⁶ Comprehensive preprocedural imaging allows for planning of alternative management strategies including hybrid off-pump CABG surgery and transcatheter approaches.⁷

This case raises an ethical dilemma. The patient could potentially have avoided a trip to the operating theatre and a midline sternotomy scar. However, it is well established that palpation during open heart surgery is not an uncommon presentation of a porcelain aorta and that the most sensitive technique for detecting ascending aortic atheroma and calcification during open heart surgery is epiaortic echocardiographic scanning of the aorta in conjunction with manual palpation.⁸

It has also been recently reported that novel surgical approaches including simultaneous transapical transcatheter aortic and mitral valve implantation, may be considered in the future for patients diagnosed with a porcelain aorta with an indication for surgery.⁹



Figure 1 Fluoroscopy during attempted Cardiac Resynchronisation Therapy (CRT) upgrade shows a heavily calcified aorta.

Learning points

- ▶ Clinicians must be attentive to diagnosing a porcelain aorta, which can be identified on various imaging modalities.
- ▶ Diagnosing a porcelain aorta has wide-ranging implications for surgical intervention, but this needs multidisciplinary discussion and preplanning.



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On review of the case, the risks of proceeding with further investigations and intervention were discussed with the patient. The decision was made not to pursue any further treatment and the patient was discharged to a residential home. The patient has been doing well since discharge.

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